C L A I M S

1. The method of detecting the presence or assessing the severity of vascular disease which includes the administration to the human host of an agent which is adenosine, functional adenosine receptor agonists, metabolic precursors or by-products of adenosine, or phosphorylated derivatives of adenosine in conjunction with invasive or noninvasive techniques.

2. The method comprising the use of an agent which is adenosine, functional adenosine receptor agonists, metabolic precursors or by-products of adenosine, or phosphorylated derivatives of adenosine as a substitute for exercise in conjunction with myocardial perfusion imaging to detect the presence and/or assess the severity of coronary artery disease in humans.

3. The method comprising the use of an agent which is adenosine, functional adenosine receptor agonists, metabolic precursors or by-products of adenosine, or phosphorylated derivatives of adenosine as a substitute for exercise in conjunction with imaging to detect the presence and/or assess the severity of ischemic ventricular dysfunction in humans.

4. The method comprising the use of an agent which is adenosine, functional adenosine receptor agonists, metabolic precursors or by-products of adenosine, or phosphorylated derivatives of adenosine as a coronary hyperemic agent in conjunction with means for measuring coronary blood flow velocity to assess the vasodilatory capacity (reserve capacity) of coronary arteries in humans.

5. The method of claim 1, 2, 3 or 4 wherein the agent is adenosine.

6. The method of claim 2 wherein myocardial perfusion imaging is performed by any one of several techniques including radiopharmaceutical myocardial perfusion imaging, planar (conventional) scintigraphy, single photon emission computed tomography (SPECT), positron emission tomography (PET), nuclear magnetic resonance (NMR) imaging, perfusion contrast echocardiography, digital subtraction angiography (DSA), or ultrafast x-ray computed tomography (CINE CT).

7. The method of claim 6 wherein the radiopharmaceutical is a physiologically compatible agent which is thallium-201, technetium 99m, derivatives of technetium 99m, nitrogen-13, rubidium 82 or iodine-123.

8. The method of claim 3 wherein ischemic ventricular dysfunction is measured by any one of several imaging

techniques including echocardiography, contrast ventriculography, or radionuclide angiography.

9. The method of claim 4 wherein coronary blood flow velocity is measured by any one of several techniques including Doppler flow catheter, digital subtraction angiography or other radiopharmaceutical imaging technique.

10. The method of claim 1, 2, 3, or 4 wherein the agent is administered intra-arterially or intravenously, by bolus injection or continuous infusion.

11. The method of claims 1, 2, 3 or 4 wherein the agent is administered parenterally in doses ranging from 20 - 200 mcg/kg/min (intravenously) or 2 - 20 mcg as a bolus (intracoronary).